

Burnham, in the parish of Thornton Curtis, in north Lincolnshire, four miles from the Humber, where entrenchments have been found, as the site of the battle of Brunanburh, when, under Athelstane, the south of England obtained the dominance over the north.

Dr. Mill exhibited and described a map showing the names of the physical features of England and Wales to which the Royal Geographical Society's council had given its imprimatur. Mr. Whitaker protested against the use made of the term weald, the new name given to Ashdown Forest, and other points. It is to be hoped that after a thorough discussion by all interested a general agreement will be come to as to the use of topographical terms. The majority of those on the map will be accepted by all.

Three papers dealt with map-making. The Rev. H. S. Cronin described what he believed to be the way in which Ptolemy constructed his map of Asia Minor, and pointed out how wrong conclusions were certain to arise from treating it as if it were a modern map, or his geography as modern geography. Mr. C. R. Beazley contributed an account of the Portolani of the early fourteenth century, the first true maps of the Mediterranean. Major C. F. Close discussed the methods of topographical surveying suitable for different countries, choosing the United Kingdom, India, the Gold

Indian Ocean under the leadership of Mr. Stanley Gardiner. This was duly appointed, and a grant of 150*l.* assigned to it.

Another important committee was nominated on the joint recommendation of geologists and geographers to collect information and report on the meaning and distribution of local terms given to topographical and geological features.

CONFERENCE OF DELEGATES OF LOCAL SCIENTIFIC SOCIETIES.

TWENTY years have passed since the local scientific societies of this country first had the opportunity of coming into official relation with the British Association. Although it is believed that this relationship has been, in various ways, of much benefit to many of the societies, it must be admitted that the results, viewed as a whole, have hardly equalled the expectations which were originally entertained when the scheme of affiliation was projected. This view was prominently brought forward at the conference of delegates from the corresponding societies recently held at Cambridge.

The chairman of the conference, Principal E. H. Griffiths, F.R.S., of Cardiff, pointed out the desirability of binding together all the scientific societies of this kingdom, so that they could move, in matters of national importance, as one body. He pictured them, at present, as a scattered heap of iron filings, waiting for the British Association to act as a magnet in their midst, so as to "transform the confused assemblage into a field of symmetry and beauty."

The work of the local societies may be said, broadly speaking, to be of two kinds, *educational* and *technical*, the latter including observational and investigational work. Of these branches, the chairman was disposed, in the present state of things, to regard the former as the more important. "The work is educational not only in arousing intelligent interest in the facts of natural science and quickening in the individual the power of observation, but also in promoting the missionary spirit which will enable the members to excite the interest and sympathy of their neighbours."

In order to extend the influence of the British Association, Principal Griffiths suggested some relaxation in the rules which now regulate the admission of societies. At present no society can be brought into union unless it publishes the results of original investigations. But, said he, "it is very doubtful if publication is the best test of merit"; and he added that if we exclude those societies which "refrain from adding to the mass of literature under which there is danger of our being smothered,

it is possible that we are excluding the very bodies whose sympathy and interest we should most wish to encourage."

Principal Griffiths was accordingly led to advocate the recognition of two classes of corresponding societies, one to be called affiliated societies, conforming to the existing regulations, the other to be called associated societies, including any local society which has existed for a period of, say, three years, and numbers not fewer than fifty members. "Surely," said the chairman, "we desire to throw our doors as wide open as possible, surely we wish to give every encouragement to all scientific societies, but more especially to those working under difficulties, to strengthen the hands of their promoters, and to ask their aid and assistance in our deliberations. Moreover, it is precisely those societies with narrow means, and whose members are possibly drawn from working classes, that can be of the greatest use to us. They are missionaries situated where we most want them, and preaching to the unconverted. This yearly meeting of single delegates from a few of the leading societies, although an admirable nucleus, is not sufficient to produce crystallisation of the scientific interests in solution in the population of this kingdom."

As a means of inter-communication between the societies, and with the view of uniting them "in common action for

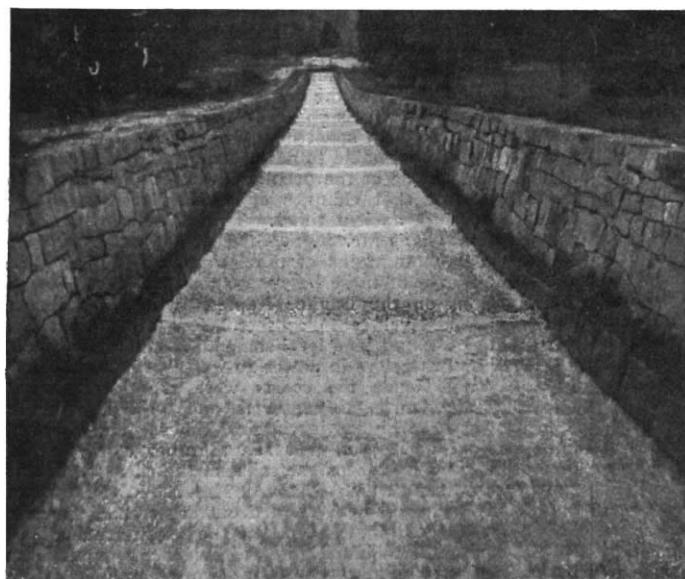


FIG. 1.—A Roll Wave leaping the Outfall of the Grünbach Conduit.

Coast, where "long traverses" are necessary owing to the dense forest making the cost of triangulation prohibitive, South Africa, already triangulated and ready for plane tabling, which can be carried out in the open country under very favourable conditions, and Canada, for which a scheme has recently been drawn up by Major Hills. In Canada, in very special circumstances, photographic surveying has been carried out, but Major Close considered that ordinary methods under ordinary conditions were better as regards accuracy, rapidity, and cost. This was queried in the subsequent discussion. Sir David Gill dealt with the condition of the South African survey, which owes so much to him.

The report by Dr. Cornish of the committee on terrestrial surface waves and wave-like surfaces was read. It contained a description of roll waves, a term used to describe waves resembling a bore travelling down stream more rapidly than the current in such open paved conduits as the lower courses of the Guntenbach and Grünbach, which flow into the Lake of Thun (see Fig. 1). The phenomenon has been noticed on the Tees. The committee was re-appointed.

The geographical section combined with the zoological one to recommend the appointment of a committee to carry on physical and biological investigations in the western

the attainment of some purpose of national or scientific importance," Principal Griffiths advocated the publication of a *Journal of Corresponding Societies*, towards the expenses of which the various societies should contribute according to the respective numbers of their members.

The chairman's views were received with much favour by the delegates and others attending the meeting. Sir Norman Lockyer referred to his presidential address of last year, in which he suggested that the organisation of the corresponding societies might become a potent and valuable machine for influencing public opinion on matters relating to science throughout the country. He regarded the corresponding societies as having before them an important and undeveloped field of work. With regard to the Corresponding Societies Committee, he advocated more frequent meetings and a closer union with the central organisation of the British Association. Mr. W. Whitaker agreed with the chairman that the time was come when it seemed desirable to reconsider, and possibly revise, the old conditions regulating the affiliation of local societies. He considered that the maintenance of a good museum might be as much a ground for union as the publication of a volume of proceedings. The Rev. W. Stallworthy advised the appointment of a small number of competent members as inspectors, who should visit the various local societies and report upon their work to the authorities at headquarters. Prof. Ewing advocated the admission of the smaller societies in outlying districts, where publication was not to be regarded as the test of usefulness. Dr. G. Abbott supported the views of the chairman, and enlarged on the advantage of uniting societies in local groups. Many societies in the south-east of England had been strengthened by such a union. He thought that the British Association should get into touch with as many societies as possible, and that no barrier should be raised, such as that of publication. The Rev. T. R. R. Stebbing deprecated publication being used as a test of the usefulness of a society. If the paper were important, it ought to go to a central society, and not be published locally; if it were unimportant, it were better not published at all.

Ultimately a committee was appointed to consider the present relation between the British Association and the local scientific societies, and to make suggestions to the council with a view to the greater utilisation of this relationship, and the extension of affiliation to societies now excluded.

The subject of museums, which has often been discussed at the annual conference of delegates, was brought forward by the Rev. W. Johnson, of York, who read a paper on the utilisation of local museums, with special reference to schools. He believed that provincial museums have often failed in developing the scientific habit in visitors, because they have given too much prominence to rarities, whereas the beginner needs illustrations of common objects, such as he is likely to find in his own study in the field. A large amount of material now lies buried in our museums needing judicious display and description to render it available to the young student. Mr. Johnson held that every museum should have attached to it a demonstration room, fitted with lanterns and other lecture-room appliances, and he considered that demonstrations by competent persons might well be paid for by the State, in consideration of their value in assisting the higher science teaching in our schools. The excellent work of Mr. Crowther, the curator at Leeds, in giving demonstrations to children from the local schools, was referred to with warm approval. Mr. Johnson recommended that during the winter-holidays museum-lectures should be given on elementary meteorology, explaining the nature and use of the various instruments which are used at most museums for obtaining weather records.

In discussing the paper, Mr. Rudler referred to the difficulties incidental to museum demonstrations, and advocated the delivery of the lecture in a separate room, followed by adjournment to the museum. The interest of the delegates in the museum question centred in the point of contact between the local museum and the local society, and he referred to some of the ways in which the society might assist the museum, such as the frequent display of fresh specimens of wild flowers with instructive labels. Whilst admitting the importance of taking children to the museum, he held that it was equally desirable to take the museum

to the children, and he consequently favoured the practice of circulating educational cabinets of specimens among the local schools.

At the second meeting of the delegates, Mr. J. Hopkinson, of the Hertfordshire Natural History Society, brought forward a very practical subject relating to the publications of scientific bodies. He denounced the insufficiency of the title given in certain papers, and the absence of an index, a table of contents, or a list of plates in the publications of many societies. The date of publication of each part or number of a volume of proceedings should always be given, and in the case of reprints of papers, the original pagination should be preserved, whilst the date and volume of the publication from which they are extracted should invariably be stated. Dr. Tempest Anderson, who presided at the second meeting of the delegates, spoke strongly in favour of securing uniformity in the size of the publications of scientific societies.

In the discussion on the aid which local societies could give to the work of the committees of various sections of the British Association, Dr. H. R. Mill, as a delegate from Section A, pleaded for increased interest in meteorology, and urged the local societies to take regular and systematic observations. Mr. Whitaker, on behalf of Section C, solicited the aid of the societies in seeking the derivation and precise significance of local terms relating to geological and geographical subjects—an appeal which was supported by Dr. Herbertson, representing Section E. The Rev. T. R. R. Stebbing, speaking for Section D, suggested, as additional work for local societies, the study of overland lines of migration of birds, and the collection of slugs from all parts of the British Isles. Miss Sargent solicited information with regard to certain points in the growth of British orchids. The conference was not favoured with suggestions from any of the other sections.

EOCENE WHALES.

A MOST important contribution to our knowledge of the extent and affinities of that group of Eocene marine mammals known as *Archæoceti* has recently been made by Prof. E. Fraas, of Stuttgart, in an illustrated memoir entitled "Neue Zeuglodon aus dem unteren Mitteleocän vom Mokattam bei Cairo," published in Koken's *Geologische und Palæontologische Abhandlungen*. The *Archæoceti*, or *zeuglodonts*, which have hitherto been definitely known only by various species of the typical genus *Zeuglodon*, have been regarded by many zoologists as the direct ancestors of the modern whales and dolphins, and if this view be accepted, it has for some time been evident (although this was not the opinion of the late Sir William Flower) that the toothed whales, at any rate, are probably the descendants of carnivorous mammals, as it seemed impossible that the *zeuglodonts* could be derived from a herbivorous type.

The carnivorous descent of the *zeuglodonts* is now fully demonstrated by Prof. Fraas, who describes two new generic representatives of the group—*Protocetus* and *Mesocetus*—from the well known Middle Eocene nummulitic rocks of the Mokattam range near Cairo. Of the former genus the author figures a nearly complete skull, together with many of the bones of the skeleton. In both genera the teeth are of the typical mammalian number, and divisible into incisors, canines, premolars, and molars, the latter, in *Protocetus* at any rate, being quite unlike the corresponding teeth of *Zeuglodon*, and approximating to those of the primitive Eocene Carnivora of the group *Creodontia*. The skull, moreover, although much more elongated than in any of the land forms, presents all the distinctive characteristics of the latter group, and there can be little hesitation in accepting Prof. Fraas's view that *Protocetus* and *Mesocetus* form connecting links between the terrestrial creodont carnivores on the one hand and the marine *zeuglodonts* on the other. They are, in fact, terrestrial animals in course of modification into purely aquatic ones. Prof. Fraas does not, however, by any means stop at this, but proceeds to argue that the *Archæoceti* are entirely unconnected with either the whalebone or the toothed whales, and merely form a marine group of *Creodontia* which died out without leaving any descendants. As he rightly observes